



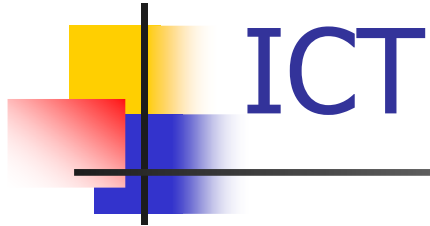
Professionaliteit & ICT: van Software Engineering naar Human Values

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Professor Delft University of Technology

Professorial Fellow Australian National University



- Information
- Ubiquitous
- Pervasive
- Ambient
- Constitutive
- Puzzling
- Value Laden

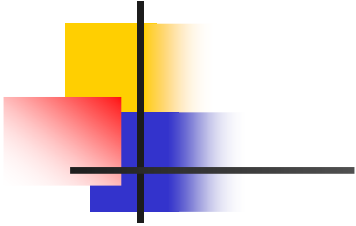


Constitutive Technology

- Not merely Enabling
- Constitutive

- Shapes practices, discourses, institutions

Air traffic control



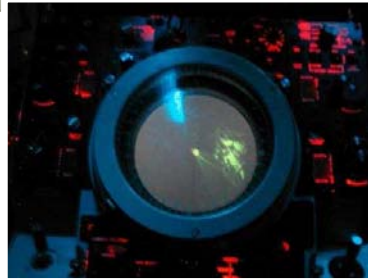
Financial trade



Operation room



Army & navy



Chemical & nuclear plant



Public safety





Puzzling

Democracy

Trust

Privacy

Property

Community

Person

Intelligence

Life

Democracy

Work

Health

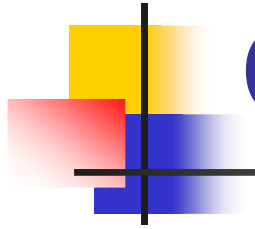
Friendship



ICT: More Puzzling

**Electronic
E-
Informational
Intellectual
Cyber
Digital
Artificial
Artificial
Digital
Tele
E-
Net**

Democracy
Trust
Privacy
Property
Community
Person
Intelligence
Life
Democracy
Work
Health
Friendship



Conceptual Vacuum

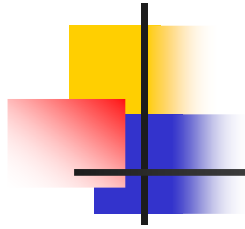
"New Sort of Community"

"New Sort of Privacy"

"New sort of Trust""

"New sort of Democracy"

"New sort of Friendship"



Conceptual Vacuum

Conceptual Vacuum → Policy Vacuum

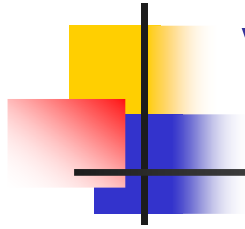
Policy Vacuum → Design Vacuum

Design Vacuum → Information
Architecture?



Observation 1

- We are changing the nature of the things by applying ICT and we don't know how to think about it
 - In health care
 - In public administration
 - In education
 - In business administration
 - In production, logistics, science, ...



Values built into Technology

- Examples:
- Low hanging overpasses
- Weirs in Dutch Indies
- Geographical Informations Systems (GIS)
- Picture Archive Systems (PACs)
- Seach Engines



EXIT 28B

Brooklyn Br
RIGHT LANE EXIT ONLY

11' - 0" CLEARANCE
NO COMMERCIAL TRAFFIC

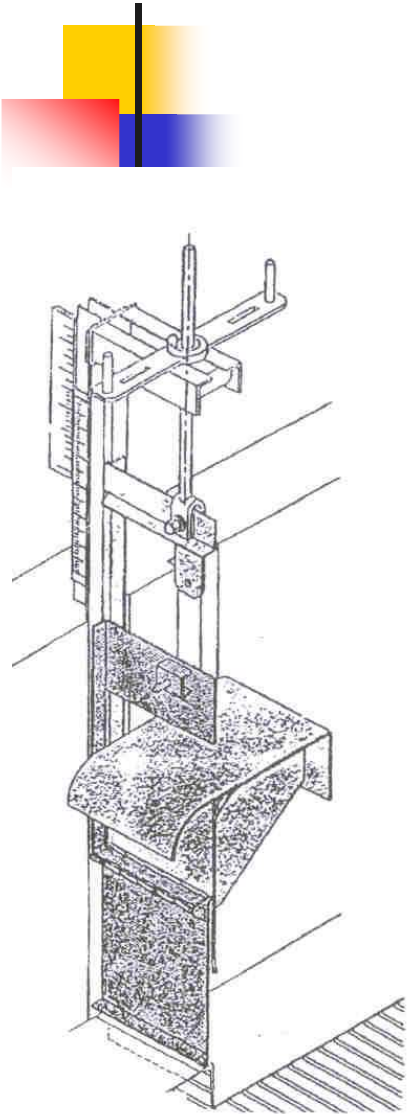
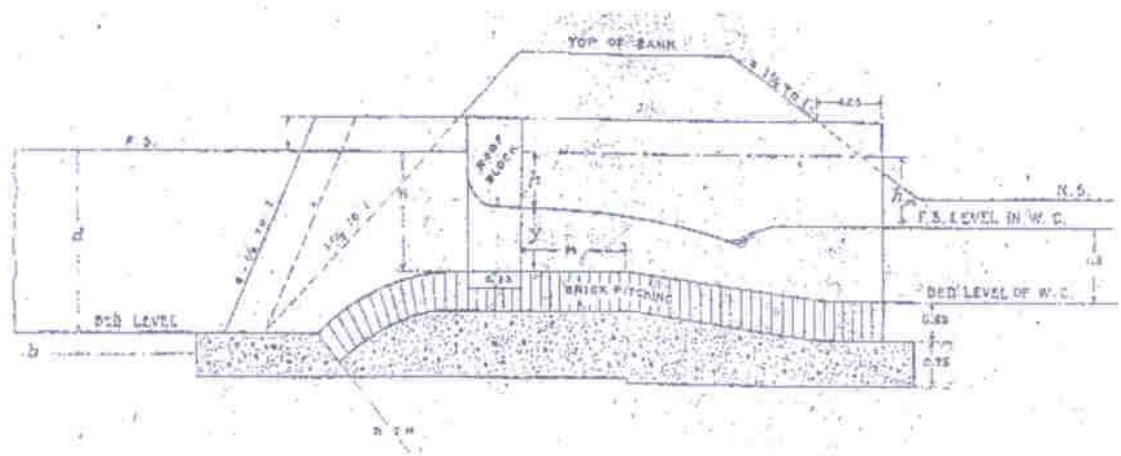


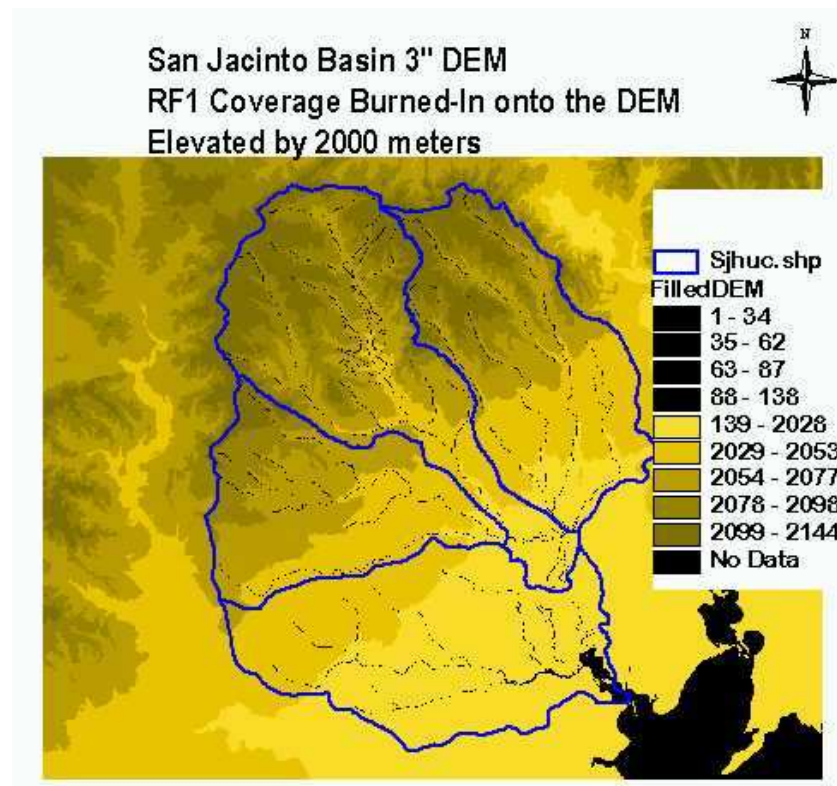
Figure 3 Two discharge measurement structures

Crump's adjustable proportional module (cross section).



Source: Crump [7]

GIS: "Disappearing" Wetlands



Medical Knowledge (history)



Medical Knowledge (today and tomorrow)



Firemen, broadband videolinks, emergency medicine





Bias in Search Engines

GOOHOO!

Web [Images](#) [Groups](#) [News](#) [Goohoo](#) [more »](#)

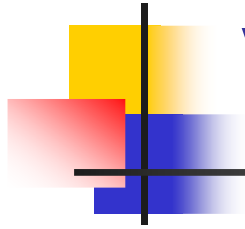
Goohoo Search

I'm feeling Sassy

[Advanced Search](#)
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Searching more than your measly search engine!



Values Built into

- Interface
- Algorithms
- Ontologies
- Code
- Protocols
- Integrity constraints
- Architecture
- Identity Management
- Authorization Matrix



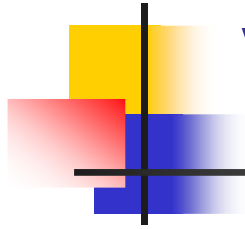
Observation 2

- values are intentionally or inadvertently built into our designs and we do not have the tools and methods to systematically and transparently think about it



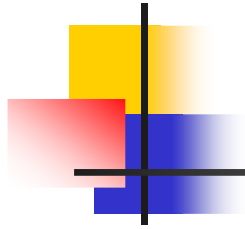
Value sensitive design of ICT

- Technology Push (....-1970)
- Social context (1970-2000)
- Value Context (2000-...)

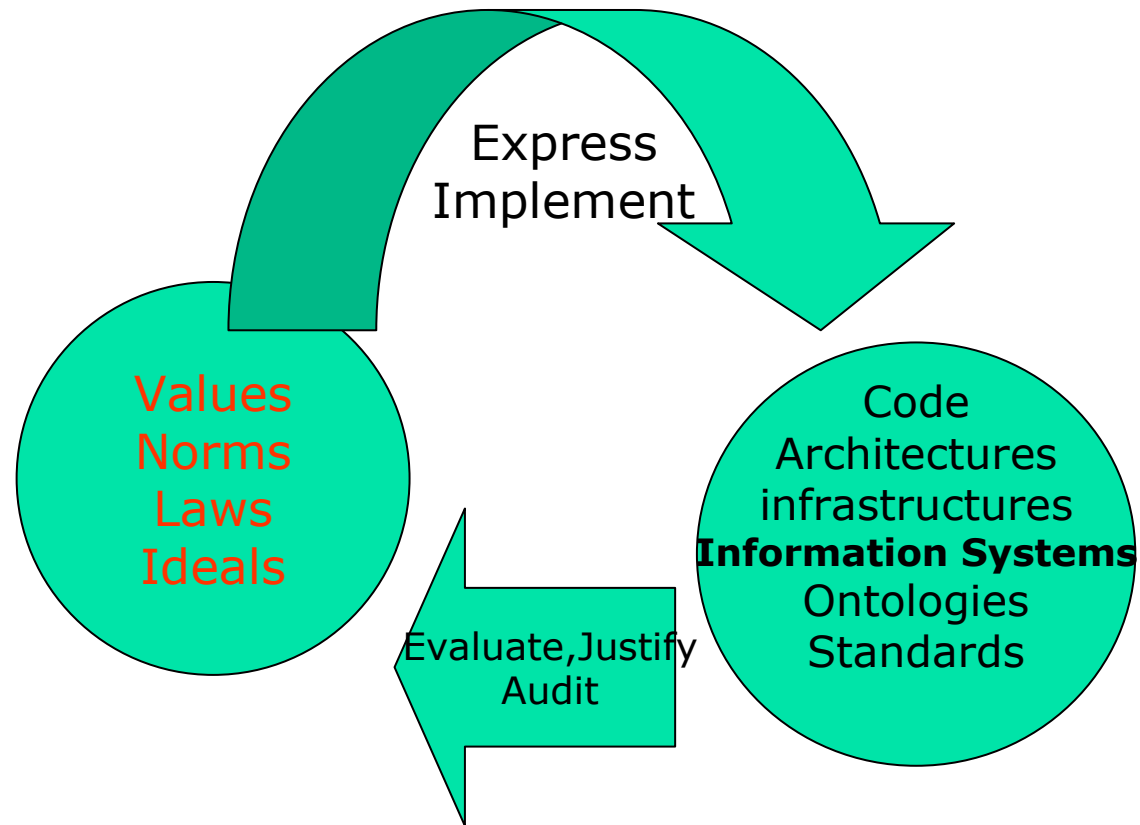


Value Sensitive Design (VSD)

- CITRIS: Centre for IT Research In the Interest of Society (UCLA); 320 M US\$
- www.designforvalues.org
- Friedman, Nissenbaum, Van den Hoven, Camp, Brey, ...



Ethics and ICT





Third Observation

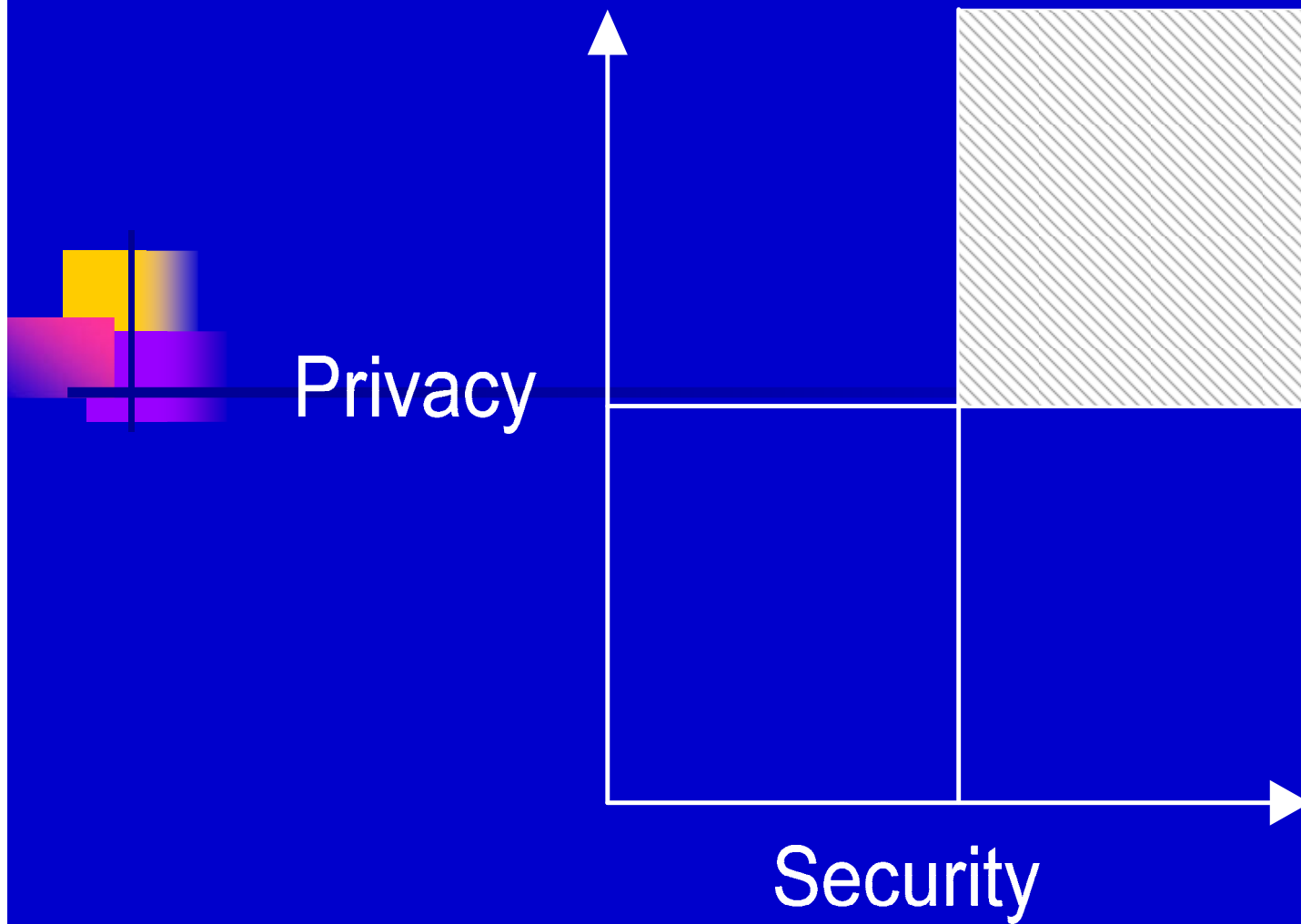
- We need value sensitive and value competent
- IT Professionals
- With ability to
 - articulate
 - justify
 - implement
 - Audit



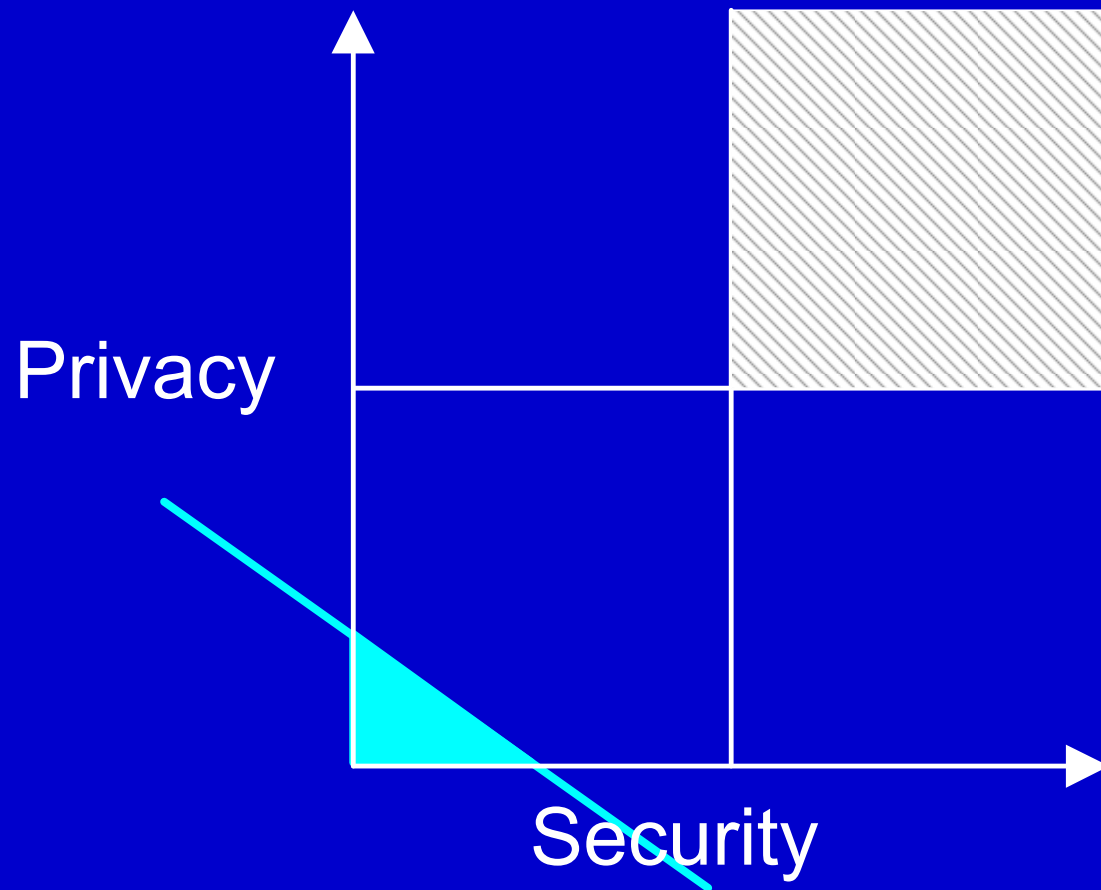
Final Observation

- Innovations are often reconciliations of conflicting moral and societal values

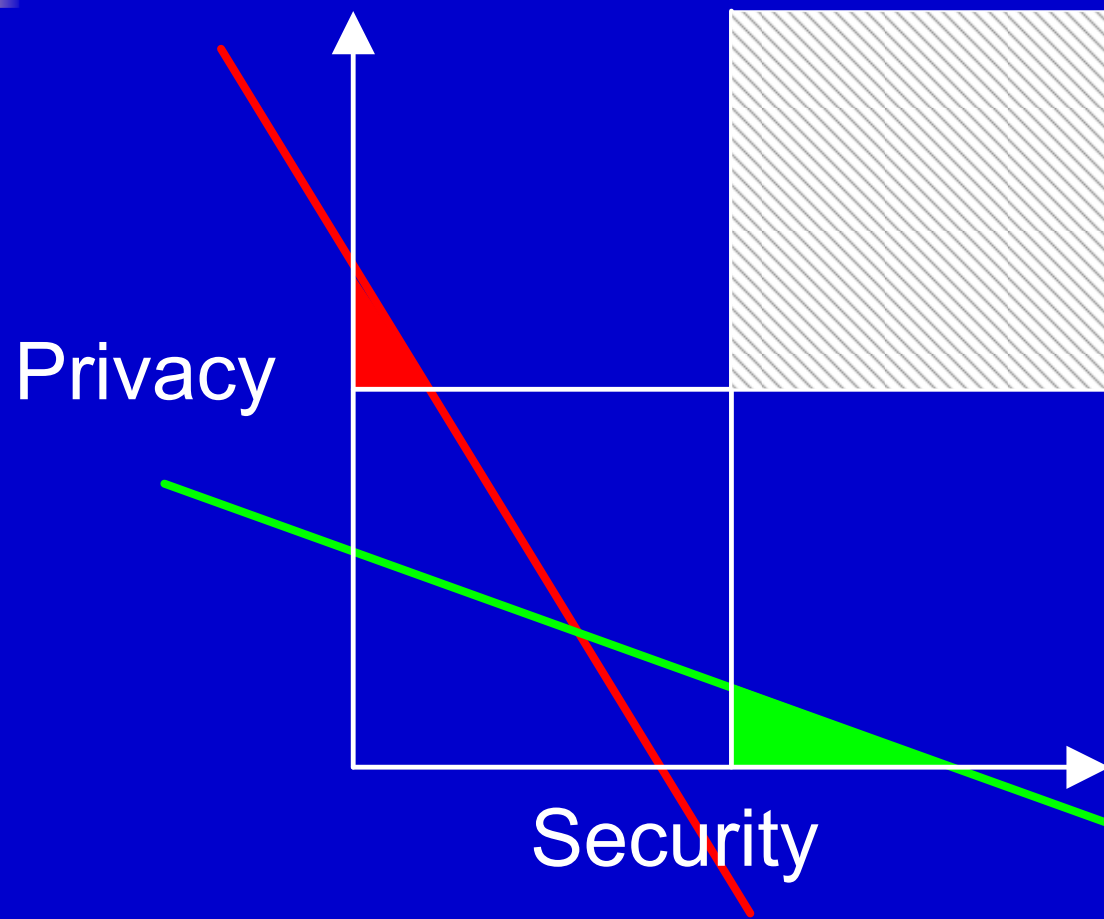
Privacy and Security



No Privacy, no Security



Privacy or Security



Smart Camera System: Privacy and Security

